US PETROCHEMICAL EXPORTS TO HIT RECORD ON CAPACITY SURGE, EASING OF LOGISTICS CONSTRAINTS

With the last wave of new capacity additions and easing of logistics constraints, the US petrochemical sector has a clear path to boosting exports to new records in 2023. Even with a recessionary global economic outlook dampening demand overseas and capacity surging in China, the US cost advantage is simply too great to hold back the floodgates.

The US exported a record 11m tonnes of polyethylene (PE) in 2022 as production from new crackers and derivative plants accelerated - up 25% from 2021 and surpassing the previous record in 2020, according to the ICIS Supply and Demand Database.

In chemicals and plastics, PE is the number one US export by far and volumes should surge even higher in 2023 as Shell's Pennsylvania cracker and downstream PE capacity ramps up, and Bayport Polymers' (Borealis/TotalEnergies) PE project in Texas comes online in Q2 2023.

US PE exports in January 2023 comprised 42.2% of total sales after reaching a record high of 46.7% in December and averaging 38.5% for all of 2022, according to data from the American Chemistry Council (ACC) and Vault Consulting.

Chemical Data (CDI), part of ICIS, expects that PE exports that averaged 39% of total sales in 2022 will jump up to 43-46% of total sales this year. This will be driven by the second wave of new US and Canada PE capacity of around 9bn lbs/year (4.1m tonnes/year) from Q4 2021 to Q3 2023 needing to find a home, weak domestic demand in H1, low natural gas-based feedstock costs that allow producers to boost exports into higher oil-based feedstock regions, additional warehouse capacity and the easing of logistics constraints that had held PE exports back.

Logistics Constraints Ease

The US must export around 45% of its total PE production to maintain operating rates at 90% following the latest wave of capacity expansions.

PE exports were constrained for much of 2022 by logistics challenges that resulted in frequent shipment delays stemming from shortages of truck drivers, warehouse space and container ship availability.

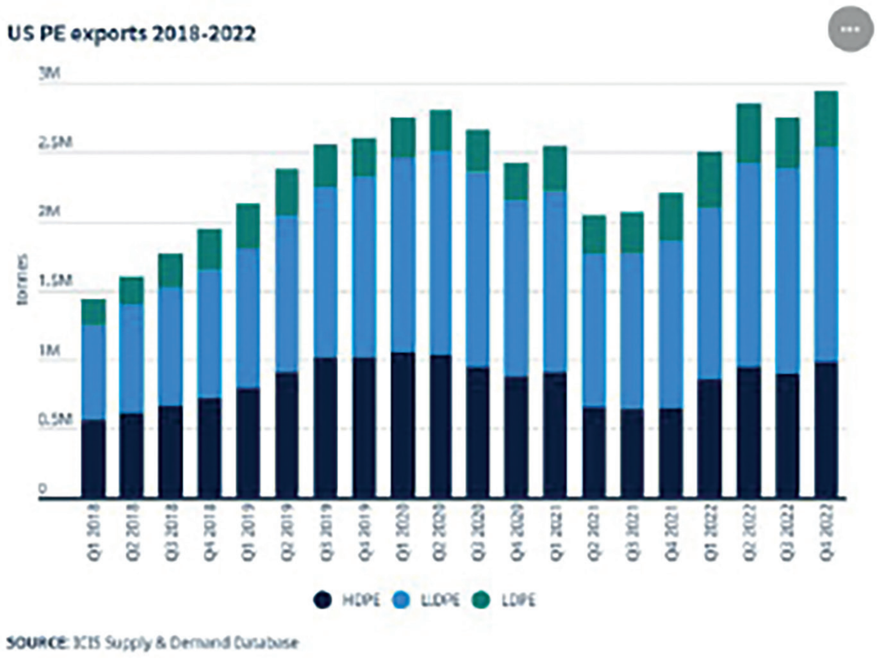
As demand for container ships receded in H2 2022, these logistics issues have also faded, resulting in exports as a percentage of total sales breaching the 40% threshold in August and remaining above that level for the remainder of the year.

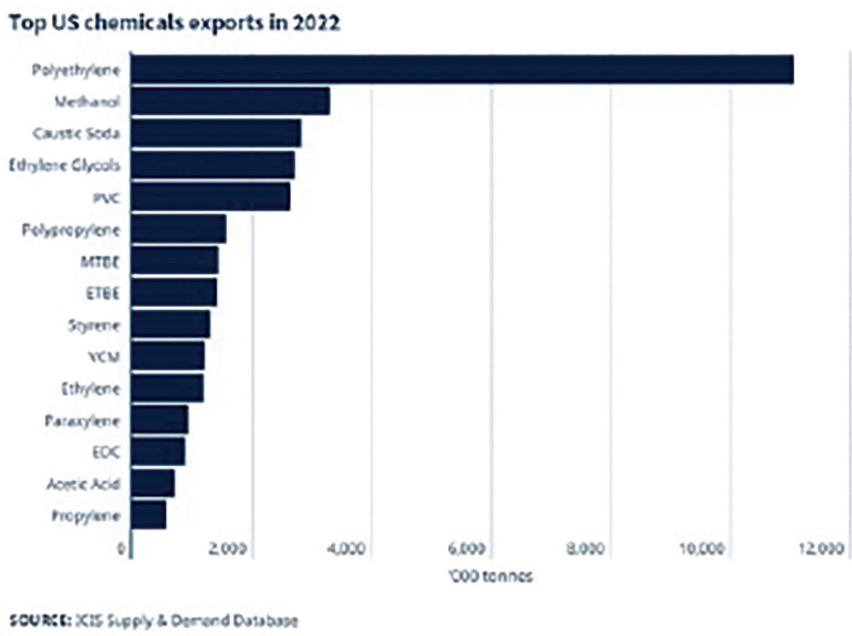
In January, LyondellBasell saw modest improvements in US export demand with easing of logistics constraints helping volumes.

"We're going to continue to see an increase in exports from the US with all the new capacity coming on. As a company, we have been increasing [our] portion of exports as we ramp up the capacity with the new Hyperzone [PE] assets," said Ken Lane, executive vice president, Global Olefins and Polyolefins (O&P) at LyondellBasell, on the company's Q4 earnings call in early February.

LyondellBasell has been ramping up production at its Hyperzone high density polyethylene (HDPE) plant through 2022 after a shutdown in Q4 2021 to make modifications to improve reliability.

It is not just US PE exports that are surging. US ethylene glycol (EG) exports shot up 33% in





2022 from 2021, while US polyvinyl chloride (PVC) exports rose 26% year on year, according to the ICIS Supply and Demand Database.

Increased US EG exports are expected to help plug the supply gap in northeast Asia during a heavy turnaround season in Q2.

EG buyers in northeast Asia expect the scheduled capacity loss in the region to be mitigated by an increased inflow of US cargoes. Over 75,000 tonnes have been fixed for delivery into China between the second half of April and early June.

On the PVC side, US exports may have plateaued for the moment at relatively high levels as prices have increased and China's market has been slow to awaken. Exports from China's oversupplied market continue to flow into global markets.

US petrochemical exports will run into a big headwind from a surge of new projects starting up in China. China will be adding record-breaking chemical and fertilizer capacity in 2023 of nearly 140m tonnes/year, dwarfing the previous record of over 90m tonnes/year in 2014 and driving global oversupply, according to an ICIS analysis.

China is the largest importer of PE by far, but accounted for less than 11% of US PE exports in 2022, with the wider northeast Asia region accounting for around 14%, according to the ICIS Supply and Demand Database.

Tremendous Cost Advantage

Buoyed by low-cost and abundant supplies of natural gas liquids (NGLs), US ethylene and derivatives producers continue to experience a tremendous cost advantage from a global standpoint, enabling greater volumes of exports.

For LLDPE - the leading grade for US PE exports - US spot margins from ethane feedstock were over $800/tonne by mid-March. That compares to negative margins in northeast Asia and close to zero in northwest Europe on a spot basis - both based on naphtha feedstock, according to ICIS Margin Analytics.

Chemical Data (CDI), part of ICIS, forecasts US natural gas prices averaging close to $3/MMBtu in 2023 versus around $6/MMBtu in 2022 with prices gradually moving from the mid $2/MMBtu level to the high $3/MMBtu range by the end of 2023.

On the demand side, the Freeport LNG export terminal which had been offline since a fire in June 2022 should be fully operational by early April. Low prices also ushered in some coal-to-gas fuel switching. This has moderately increased demand from utilities which is not expected to reverse over the next few months.

Yet the US petrochemical feedstock cost advantage based on natural gas should remain firmly intact, as long as crude oil prices linger at relatively high levels. As a rule of thumb, US producers maintain an advantage as long as the oil/gas price ratio ($/bbl Brent/$MMBtu) is higher than 7x.

Demand, Destocking and Economic Outlook

On the US demand side, the near-term economic outlook is no doubt challenging with the ISM US Manufacturing Purchasing Managers' Index (PMI) in contraction territory (under 50) for the fourth consecutive month in February.

Weakening demand in H2 2022 led to severe inventory destocking across chemical chains, which continues into Q1 2023. This is particularly being felt in housing and construction end markets, as well as markets closer to the consumer such as do-it-yourself (DIY) architectural coatings, electronics, appliances, kitchen and bakeware, and even personal care.

For the key US PE market, destocking largely continues but should come to an end by Q2.

Even when the PE destocking cycle ends, there is unlikely to be a V-shaped recovery as overcapacity will linger amid sluggish economic conditions.

With more PE capacity in the second wave starting up in H1 2023 and ramping up to full rates by Q3, oversupply should last until Q4, but it will also depend on how hard or soft a recession the US has, and when it begins.

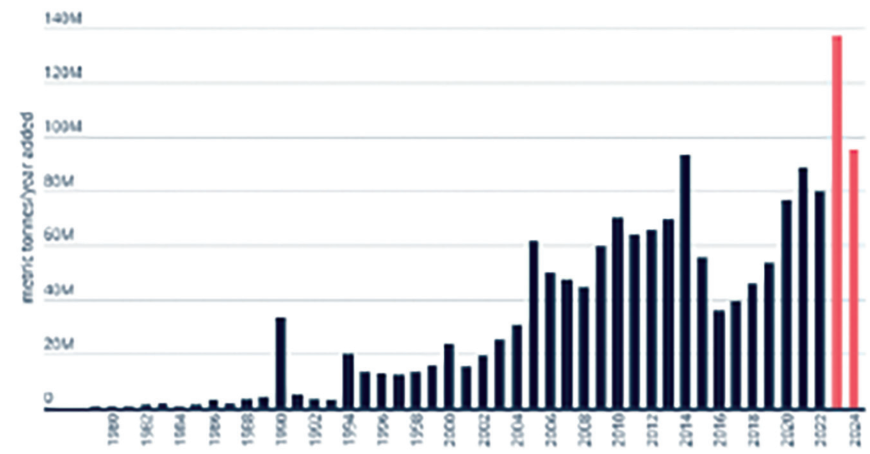
For the US economic outlook, inflation had been the number one concern. But now the US Federal Reserve's series of aggressive interest rate hikes to tame such inflation is putting major stress on the country's regional banking system.

The emerging regional bank crisis in the US with the failures of two major institutions in the span of a few days in the first half of March bears close watching. The contagion of the crisis of confidence is also spilling over to European banks. At the very least, this will significantly tighten lending, further depressing economic growth and potentially tipping the US into recession.

ICIS projects US GDP growth will slow dramatically from 2.1% in 2022, to just 0.4% in 2023 with global GDP growth shrinking from 2.8% in 2022, to 1.7% in 2023. A mild recession in the US is the base case, while Europe has dodged a bullet from the record warm winter and China is reopening after reversing its zero-COVID policy.

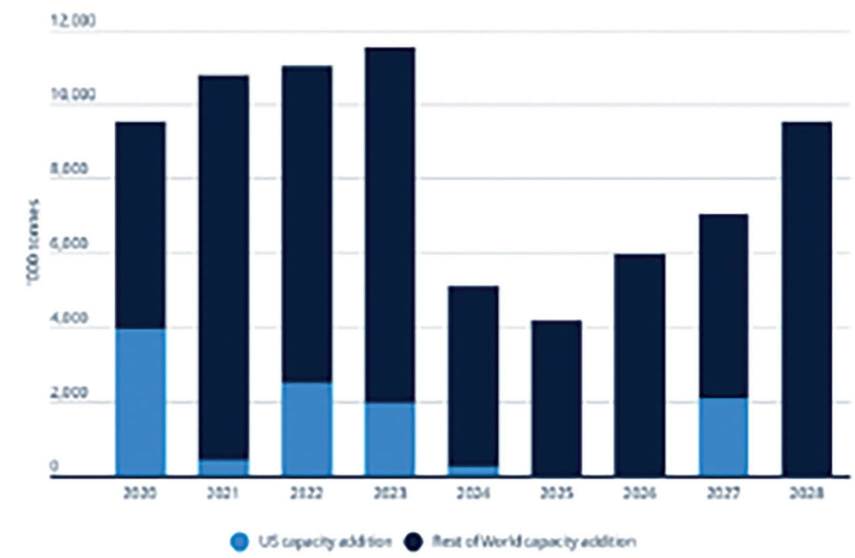
Chemical company executives are closely watching for signs of a sustainable China rebound, which will be a key factor in the US petrochemical export out

China adds record-breaking chemical and fertilizer capacity in 2023



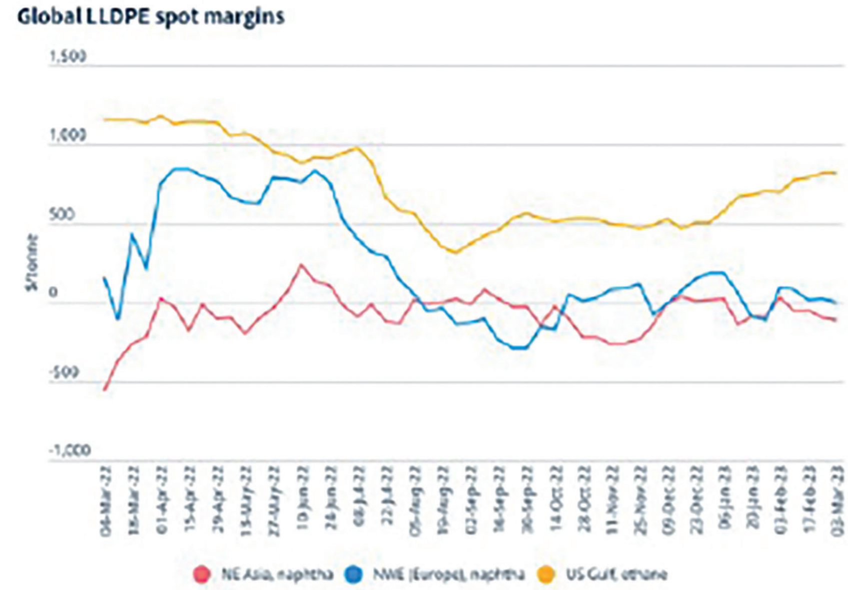
SOURCE: ICIS Supply & Demand Database

US vs global ethylene capacity additions



SOURCE: ICIS Supply & Demand Database

Global LLDPE spot margins



SOURCE: ICIS Supply & Demand Database

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Joseph Chang is Global Editor of ICIS Chemical Business, a weekly publication covering game changing trends in the chemical industry and analyzing drivers of chemicals prices worldwide. This includes feedstock and price developments, supply and demand trends, new project activity and sustainability. He has been with ICIS and one of its predecessor publications for over 25 years, specializing in coverage of key developments in the global chemical sector as well as financial topics such as macroeconomics, capital spending, equity and debt markets, and mergers and acquisitions. Joseph has a degree in Finance and International Business from New York University's Stern School of Business.

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